whereas, according to Mr. Stone, the ratio which measures this change would be

$$\frac{N}{N+\delta N} = 1 - \frac{\delta N}{N}, \text{ nearly,}$$

where, as before, the difference from 1 is nearly 366 times too great.

Mr. Stone's error appears to arise from his *equating* two things which are really different, and which are inconsistent with each other,—viz. Bessel's and Le Verrier's determinations of the Sun's mean motion in longitude in the same interval of time.

Major-General Tennant is wrong in supposing that solar observations are no longer employed in Observatories for the determination of mean solar time. If this were the case, it would only show that the Observatories had taken a very retrograde step, since the final test whether the mean solar times have been correctly found can only be supplied by solar observations. Whenever the mean solar times are deduced from the observed sidereal times, it is tacitly assumed that the tabular mean longitudes of the Sun which have been employed are correct; and if this is not the case, the mean solar times deduced will require a corresponding correction, which can only be found by solar observations.

Thus mean solar time may be determined with reference to a natural phenomenon,—viz. the transit of the true Sun over the meridian of a given place; and the mean solar day is the average of all the apparent solar days defined as the intervals between two successive transits, and therefore has nothing arbitrary about it. To speak of Besselian mean time and Le Verrian mean time, or of the Besselian mean solar day and the Le Verrian mean solar day, can produce nothing but confusion in our ideas of the measure of time.

Additional Note on the Change in the Unit of Time.

By Prof. A. Cayley, M.A., F.R.S.

Bessel's mean Sun is what Bessel supposed the mean Sun to be: that is, a point in the heavens the mean longitude of which is

$$l = \text{const.} + 1296027''{\cdot}618184 \,.\, t + \text{term in } t^2,$$

the longitude being measured from what Bessel supposed to be the mean equinoctial point, and the unit of time being what Bessel supposed to be the Julian year of 365·25 mean solar days.

Similarly Hansen's mean Sun is what Hansen supposed the mean Sun to be: that is, a point in the heavens the mean longitude of which is

$$l = \text{const.} + 1296027''{\cdot}674055 \,.\, t + \text{term in } t'^2,$$

the longitude being measured from what Hansen supposed to be the mean equinoctial point, and the unit of time being what Hansen supposed to be the Julian year of 365·25 mean solar days.

Mr. Stone, as I understand him, contends that for the same instant of time the two points are one and the same point. If so, it seems to me that Hansen's formula must be a mere analytical transformation of Bessel's, and the question would arise, Why was any change made? My contention is that the points are not one and the same point; and in support I show that, assuming them to be so, we obtain two inconsistent values for the time of the Earth's rotation. As a theoretical definition of the mean Sun, I agree that "The only mean Sun known to astronomers is an imaginary body which moves uniformly in the equator at such a rate that the difference between its Right Ascension and that of the true Sun consists wholly of periodic quantities." But in astronomy there is no such thing as absolute accuracy; and I contend that neither Bessel's mean Sun nor Hansen's mean Sun is absolutely identical with the mean Sun as thus defined.

The Belts of Saturn. By Henry Pratt.

Inquiry was made at the last meeting by Mr. Ranyard whether a narrow belt on *Saturn* had been seen by others than himself. And from the reports of the meeting in the *Observatory* and *Astronomical Register* I have no doubt he referred to a narrow belt which I also saw on several occasions in October, while making observations of the inner satellites; and again on Nov. 6 and 28, while preparing to photograph the planet, I repeated the view of the same object; but it was only to identify it as a portion of features familiar to me for many years.

For the sake of clearness, I shortly describe the whole belt system, so far as it is rendered by my With speculum of 8·15-in. aperture.

The belts of the two hemispheres are, in general arrangement, usually similar and symmetrical. On both sides of the equator similar alternations of colour and proportion are usually seen. For some distance on each side of the equator extends a zone which is usually free from any markings whatever, showing only a creamy-yellow tint. At a latitude of, roughly, about 10° occurs a strong belt, narrow, sharply defined on its equatorial side, but diffused on its polar side, and gathered in places into wispy knots and curved markings. The colour of this I always see as Vandyke brown. This narrow belt is the deepest tint of all the markings on the globe; and when our atmosphere is not perfectly translucent, it is almost or quite the only detail which can be seen. So far as I can understand, this narrow belt was the subject of discussion at the last meeting. The polar side of this brown belt and its wispy curves is softened into a narrow